4. Injection Pressure Limitation

a. .Injection wells shall be operated at pressures less than the fracturing pressure of the formations open to injection in the bedrock oxide zone. Based on field test data at the Project site, a variable fracture pressure, measured at the top of the injection interval, will be used to establish maximum hydraulic pressure that may be exerted at the surface. The maximum wellhead pressure calculation will be based on the lowest measured fracture gradient of the weakest formation(s) open to injection in each well, and be dependent on the depth to the top of the interval receiving the injection fluid and the specific gravity of the injectate, but in no event shall it exceed the calculated pressure that can be safely applied to well equipment. A safety factor of 0.9 shall be applied in the calculation of the maximum allowable surface injection pressure. In wells that are open to the Escabrosa, Horquilla, Martin, upper Abrigo, middle Abrigo, and lower Abrigo formations, fracture gradients (adjusted for the safety factor) of 0.7, 1.3, 0.94, 1.48, 1.27, and 0.87 psi/ft., respectively, shall be applied in the calculation. The maximum allowable surface injection pressure will be established for each injection well on that basis.

In no case shall pressure in the injection zone during injection initiate new fractures or propagate existing fractures in the injection zone or the confining zone. In no case shall injection cause the movement of injectate or formation fluids into a USDW. Injection pressures shall be monitored using a digital instrument and recorded on a daily basis. Injection pressures that exceed the maximum allowable surface injection pressure shall be reduced immediately to a pressure not to exceed the maximum, or the well must be shut in pending correction of an equipment malfunction. In addition, the Permittee shall supply EPA with all documentation of actions implemented in compliance with Aquifer Protection Permit Section 2.6.2.5 for EPA review and approval.

Excelsior's Recommended revisions for Part II.F.5

5. Hydraulic Control Monitoring Wells

External monitoring of the ISR process around the perimeter of the Project wellfield shall be conducted to verify hydraulic control. **This mo**nitoring of ~~inward hydraulic gradients in~~ the oxide bedrock zone shall be performed using thirty (30) hydraulic control wells and twenty-two (22) paired OWs at the perimeter of the wellfield. Hydraulic control monitoring will entail using the OW pairs for head comparison and for verifying that the head gradient is at least 0.01 ft,/ft, inward, that is, from the outer OW toward the inner OW and wellfield. Head monitoring will be accomplished using pressure transducers placed in the OWs from which average daily head measurements will be recorded. In addition, the Permittee shall monitor specific conductance in the outer OWs to detect any excursion in accordance with the approved procedures defined in paragraph 6(b) of this Section F. Fluids produced from the HC wells shall be monitored for specific conductance on a daily basis.

If approved by EPA, ~~an~~ inactive (non-pumping) **HC** ~~hydraulic control~~ wells may be

used as an additional monitoring points, in conjunction with IMWs, to monitor for evidence of solution migration and an inward hydraulic gradient of at least 0.01 ft./ft. **The inactive HC well(s) would be monitored for water elevation and specific conductance on the same schedule as outer IMWs and appropriate alert levels would be set for specific conductance.** If parameters exceed alert levels in a non-pumping HC well, it should be activated (pumped) as soon as possible and associated OWs shall be installed if they are not already installed. If the associated OWs are not already installed, extraction rates shall be increased at the active recovery wells or injection rates shall be decreased at the active injection wells to reverse the excursion and restore the inward hydraulic gradient to at least 0.01 ft./ft. The choice and number of HC and OW locations to be activated and monitored during the three stages of ISR and rinsing operations shall be subject to EPA review and approval.